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Systems Engineering Analysis of AMCOM Program(s)

(5-20430 & 5-20431)

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PREFACE

This technical report was prepared by the staff of the Research Institute, The University of Alabama in Huntsville. The purpose of this report is to provide documentation of the work performed and results obtained under Delivery Order 33 of AMCOM Contract No. DAAH01-98-D-R001. Mr. Gary A. Maddux was the principal investigator. Mr. George Wandler served as the lead engineer on the effort. Mr. Doug Johnston, Systems Engineering and Production Directorate, Research, Development and Engineering Center, provided technical guidance.

The views, opinions, and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision unless so designated by other official documentation.

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Prepared for: Commander
U.S. Army Missile Command
Redstone Arsenal, AL 35898

I have reviewed this report, dated October 1999 and the report contains no classified information.



Principal Investigator

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1.0 Introduction

The Systems Engineering and Production Directorate (SEPD), Research Development and Engineering Center (RDEC) at the U.S. Army Aviation and Missile Command (AMCOM) has an engineering support contract with the University of Alabama in Huntsville. The scope of this contract provides for activities in systems engineering and manufacturing technology. The Industrial Operations Division (IOD), SEPD has the mission and function of providing technical management and engineering support as they relate to AMCOM supported weapon systems. This management and support ensures that programmatic and technical changes are incorporated only after a systematic technical evaluation and review of the total impact and cost of the change is conducted. The systems engineering analysis evaluates the long-term life cycle consequences of the change, to include impacts on the manufacturability, maintainability and supportability of the overall weapon system. In order to fulfill its mission, the IOD required programmatic and engineering support in analysis of the AMCOM systems.

2.0 Objective

The objective of this task was to perform programmatic and systems engineering analysis of AMCOM programs as directed by the IOD and formulate appropriate information reports and/or recommendations that can be used to lower life cycle costs (LCC) and improve the maintainability and reliability of future systems.

3.0 Statement of Work

The statement of work, as outlined in delivery order 33, was as follows:

- 3.1 UAH shall analyze the availability of microelectronic parts used in AMCOM systems. The analyses shall be for microelectronics specifically identified by the IOD. UAH shall assess the health of the present system configuration in terms of availability, and recommend solutions to non-availability problems. Solutions shall be presented with sufficient documentation to justify design change considerations. UAH shall not only present solutions that are unique to the system under investigation, but shall also utilize solutions that have been developed for other weapon systems within the Army and DOD when applicable. This analyses shall involve the use of government furnished databases and other automated tools such as the Enhanced Microcircuit Obsolescence Analysis Tool (E-MOAT), TACTech, and HIS Caps Expert. Other sources of information shall be used as required. UAH shall provide support to other obsolescence related efforts as required.
- 3.2 UAH shall provide technical support to the assigned program manager(s) and system engineer(s) by insuring fulfillment of general system management requirements.

- 3.3 UAH shall promote and implement IOD mission objectives as detailed in the IOD Missions and Functions Memorandum dated 19 Aug. 92.

4.0 Conclusion and Recommendations

During the time frame allocated by the delivery order, members of the UAH Systems Management and Production Lab, with the cooperation of representatives from AMCOM Systems Engineering and Production Directorate, investigated the life cycle supportability of the microelectronics of several AMCOM weapon systems. Specifically, microelectronic components were analyzed according to their availability and expected life cycle. To ascertain this information, UAH worked with the electronics industry, AMCOM project offices, and other government agencies. The results of these task efforts were published and delivered to IOD under separate cover.

Because of the rapidly changing microelectronics industry, it is imperative that this assessment be refreshed on a periodic basis. Only through the diligent monitoring of a complex system can its sustainability issues be properly addressed. It is recommended that AMCOM weapon systems adopt a proactive obsolescence management philosophy so that the total cost of ownership is reduced over the system's life cycle.